

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-34 (canceled)

Claim 35 (currently amended): A coupling for conveying fluid between a conduit and a component of a fluid system, the coupling comprising:

a body comprising a bore into which a tube end of the conduit is insertable, wherein the tube end has a smooth outer surface without annular grooves, annular flanges, or annular beads;

a gripping mechanism that grips the tube end of the conduit to fix a position of the tube end of the conduit within the bore; and

a release mechanism slidable with respect to the body to induce the gripping mechanism to release the tube end of the conduit, the release mechanism comprising two oppositely disposed release grips extending outward from an axis of the bore to facilitate manual actuation of the release mechanism.

Claim 36 (previously presented): The coupling of claim 35, wherein the gripping mechanism comprises a spring washer seated in the bore, the spring washer comprising a plurality of fingers that flex outward to receive the tube end of the conduit and extend inward to seat against the tube end of the conduit in response to pressure tending to withdraw the tube end of the conduit from the bore, wherein the release mechanism comprises a release ring comprising an interior sleeve extending into the bore to induce outward flexure of the fingers to release the tube end of the conduit in response to sliding of the release ring.

Claim 37 (previously presented): The coupling of claim 36, wherein the release ring further comprises an exterior sleeve sized to encircle a second end of the body with a clearance

sufficiently small to restrict interference with motion of the release mechanism from dirt in contact with the coupling.

Claim 38 (previously presented): The coupling of claim 36, wherein the release mechanism comprises an exterior sleeve disposed to encircle a second end of the body to define an annular gap between the second end and the exterior sleeve, the release mechanism and the body comprising a first retention feature protruding into the annular gap to establish a limited range of motion for the release mechanism.

Claim 39 (previously presented): The coupling of claim 36, wherein the release mechanism comprises an exterior sleeve disposed to encircle a second end of the body and an annular wall that extends between the interior and exterior sleeves, wherein the annular wall abuts the second end to limit motion of the release ring with respect to the body, wherein the release grips extend substantially coplanar with the annular wall.

Claim 40 (original): The coupling of claim 35, wherein each of the release grips comprises a contact surface sized to receive pressure from a digit of a user to permit actuation of the release mechanism via pressure applied by hand against the release grips.

Claim 41 (currently amended): A coupling for conveying fluid between a conduit and a component of a fluid system, the coupling comprising:

a body comprising a first end and a second end, the second end comprising a bore into which a tube end of the conduit is insertable, wherein the tube end has a smooth outer surface without annular grooves, annular flanges, or annular beads;

a gripping mechanism that grips the tube end of the conduit to fix a position of the tube end of the conduit within the bore; and

a release mechanism slidable with respect to the body to induce the gripping mechanism to release the tube end of the conduit, the release mechanism comprising an exterior sleeve sized

to encircle the second end with a clearance sufficiently small to restrict interference with motion of the release mechanism from dirt in contact with the coupling.

Claim 42 (previously presented): The coupling of claim 41, wherein the gripping mechanism comprises a spring washer seated in the bore, the spring washer comprising a plurality of fingers that flex outward to receive the tube end of the conduit and extend inward to seat against the conduit in response to pressure tending to withdraw the tube end of the conduit from the bore, wherein the release mechanism comprises a release ring comprising an interior sleeve extending into the bore to induce outward flexure of the fingers to release the tube end of the conduit in response to sliding of the release ring.

Claim 43 (original): The coupling of claim 42, wherein the release mechanism comprises an annular wall that extends between the interior and exterior sleeves, wherein the annular wall abuts the second end to limit motion of the release ring with respect to the body, wherein the clearance is small enough to substantially prevent dirt entry between the annular wall and the second end.

Claim 44 (original): The coupling of claim 42, wherein the exterior sleeve defines an annular gap between the second end and the exterior sleeve, the release mechanism and the body comprising a first retention feature protruding into the annular gap to establish a limited range of motion for the release mechanism.

Claim 45 (original): The coupling of claim 41, wherein the clearance is less than about 0.02 inches.

Claim 46 (original): The coupling of claim 45, wherein the exterior sleeve comprises an inside diameter that is nominally equal to an outside diameter of the second end, wherein the exterior sleeve is deformable to provide the clearance in response to assembly of the release mechanism with the second end.

Claim 47 (original): The coupling of claim 41, wherein the clearance extends along a length of the second end of at least 0.25 inches.

Claim 48 (currently amended): A coupling for conveying fluid between a conduit and a component of a fluid system, the coupling comprising:

a body comprising a first end and a second end, the second end comprising a bore into which a tube end of the conduit is insertable, wherein the tube end has a smooth outer surface without annular grooves, annular flanges, or annular beads;

a gripping mechanism that grips the tube end of the conduit to fix a position of the tube end of the conduit within the bore; and

a release mechanism slidable with respect to the body to induce the gripping mechanism to release the tube end of the conduit, the release mechanism comprising an exterior sleeve disposed to encircle the second end to define an annular gap between the second end and the exterior sleeve, the release mechanism and the body comprising a first retention feature protruding into the annular gap to establish a limited range of motion for the release mechanism.

Claim 49 (original): The coupling of claim 48, wherein the release mechanism comprises an annular wall that extends between the interior and exterior sleeves, wherein the annular wall abuts the second end to limit motion of the release ring with respect to the body, wherein the clearance is small enough to substantially prevent dirt entry between the annular wall and the second end.

Claim 50 (original): The coupling of claim 48, wherein the release mechanism and the body further comprise a second retention feature protruding into the annular gap on an opposite side of the second end from the first retention feature such that the second retention feature cooperates with the first retention feature to establish the limited range of motion for the release mechanism.

Claim 51 (original): The coupling of claim 48, wherein the release mechanism and the body further comprise a slot within which the first retention mechanism is movable to establish the limited range of motion for the release mechanism via abutment of the first retention mechanism with an end of the slot.

Claim 52 (original): The coupling of claim 51, wherein the first retention feature is fixed with respect to the second end and the slot is formed in the exterior sleeve.

Claim 53 (original): The coupling of claim 52, wherein the first retention feature comprises a ramp disposed to facilitate assembly of the release mechanism with the second end by inducing deformation of the exterior sleeve in response to pressure urging the release mechanism toward the second end, wherein the first retention feature further comprises a plateau adjoining the ramp to resist disassembly of the release mechanism from the second end via abutment of the plateau against the end of the slot.

Claim 54 (currently amended): A coupling for conveying fluid between a conduit and a component of a fluid system, the coupling comprising:

a body comprising a first end and a second end, the second end comprising a bore into which a tube end of the conduit is insertable, wherein the tube end has a smooth outer surface without annular grooves, annular flanges, or annular beads, the body further comprising a bend disposed to alter a flow orientation of fluid flowing between the first and second ends;

a gripping mechanism that grips the tube end of the conduit to fix a position of the tube end of the conduit within the bore; and

a release mechanism slidable with respect to the body to induce the gripping mechanism to release the tube end of the conduit.

Claim 55 (original): The coupling of claim 54, wherein the first end of the body is insertable into a bore of a body of a second coupling along a plurality of orientations such that the coupling and the second coupling, together, form a swing joint.

Claim 56 (original): The coupling of claim 54, wherein the bend comprises an angle of ninety degrees.

Claim 57 (original): The coupling of claim 54, wherein the body further comprises a first branch that terminates in a third end in fluid communication with the first and second ends through the body.

Claim 58 (original): The coupling of claim 57, wherein the first branch extends from the bend such that the coupling has a T-shape.

Claim 59 (original): The coupling of claim 57, wherein the body further comprises a second branch, wherein the first and second branches extend from the bend such that the coupling has an X-shape.

Claim 60 (original): The coupling of claim 54, wherein the coupling is part of an irrigation system for distributing water to soil, wherein the first end of the body is integrally formed with an irrigation component of the irrigation system.

Claim 61 (previously presented): The coupling of claim 54, wherein the first end comprises a second bore into which a tube end of a second conduit is insertable, the coupling further comprising:

- a second gripping mechanism that grips the end of the second conduit to fix a position of the end of the second conduit within the second bore; and

- a second release mechanism slidable with respect to the body to induce the second gripping mechanism to release the tube end of the second conduit.

Claim 62 (currently amended): A coupling for conveying fluid between a conduit and a component of a fluid system, the coupling comprising:

a body comprising a bore into which a tube end of the conduit is insertable, wherein the tube end has a smooth outer surface without annular grooves, annular flanges, or annular beads, the conduit comprising a size selected to permit watertight engagement of the body and the tube end of the conduit;

a gripping mechanism that grips the tube end of the conduit to fix a position of the tube end of the conduit within the bore; and

a release mechanism slidable with respect to the body to induce the gripping mechanism to release the tube end of the conduit;

wherein at least one of the group consisting of the body and the release mechanism comprises an indicator that indicates that the coupling is dimensioned to receive the conduit.

Claim 63 (previously presented): The coupling of claim 62, wherein the indicator indicates the size of the conduit, wherein the size is an outside diameter of the conduit that is receivable within the bore to provide the watertight engagement and to permit the gripping mechanism to securely grip the tube end of the conduit.

Claim 64 (original): The coupling of claim 62, wherein the indicator comprises a color of at least part of the body.

Claim 65 (original): The coupling of claim 64, wherein the color is substantially the same as a color of at least part of the conduit.

Claim 66 (original): The coupling of claim 64, wherein the color is blue.

Claim 67 (original): The coupling of claim 64, wherein the color is provided by molding at least one of the group consisting of the body and the release mechanism of plastic having the color.

Claim 68 (previously presented): A swing joint for coupling a conduit to a component of a fluid system, the swing joint comprising:

a first coupling comprising:
a body having a first end and a second end having a bore into which an end of the conduit is insertable; and
a gripping mechanism that grips the end of the conduit to fix a position of the end of the conduit within the bore; and
a second coupling comprising:
a body having a first end, a second end having a bore into which the first end of the body of the first coupling is insertable, and a bend disposed to alter a flow orientation of fluid flowing between the first and second ends; and
a gripping mechanism that grips the first end of the body of the first coupling to fix a position of the first end of the body of the first coupling within the bore;
wherein the first end of the body of the first coupling is insertable into the bore of the body of the second coupling along a plurality of orientations to permit disposition of the bend at a plurality of orientations with respect to the first coupling, wherein one of the first and second couplings comprises a release mechanism slidable with respect to the corresponding body to induce the gripping mechanism to release the end of the conduit.

Claim 69 (original): The swing joint of claim 68, wherein the first end of the body of the first coupling comprises a tube having an outside diameter that is substantially the same as an outside diameter of the conduit.

Claim 70 (canceled)

Claim 71 (original): The swing joint of claim 68, wherein the body of the first coupling comprises a bend disposed to alter a flow orientation of fluid flowing between the first and second ends of the body of the first coupling.

Claim 72 (original): The swing joint of claim 71, wherein the body of the second coupling comprises a bend disposed to alter a flow orientation of fluid flowing between the first and

second ends of the body of the second coupling, wherein each of the bends comprises an angle of about ninety degrees to permit orientation of the first end of the body of the second coupling at orientations including parallel to the conduit and perpendicular to the conduit.

Claim 73 (original): The swing joint of claim 68, wherein the swing joint is part of an irrigation system for distributing water to soil, wherein the conduit conveys water underground, wherein the end of the conduit and the first coupling are buried.

Claims 74-114 (canceled)